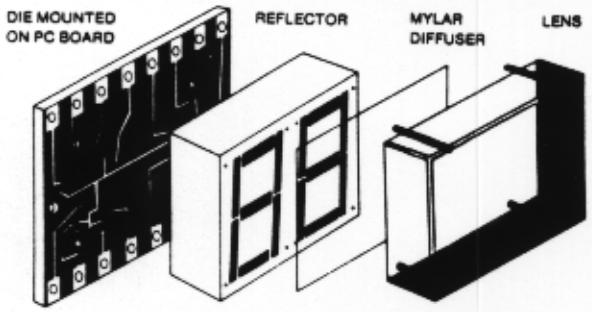
33961

THREE-FIVE SYSTEMS, INC.

MULTIDIGIT LED NUMERIC DISPLAYS TSB SERIES



Part Number	Digit Size	Part Number	Digit Size
TSB373	0.3"	TSB3882	0.3"
TSB374	0.3"	TSB3883	0.3"
TSB381	0.3"	TSB5382	0.5"
TSB382	0.3"	TSB5388	0.5"
TSB581	0.5"	TSB5881	0.5"
TSB582	0.5"	TSB5882	0.5"
TSB583	0.5"	TSB5931	0.5"
TSB584	0.5"	TSB7881	0.7"
TSB3881	0.3"	TSB7882	0.7"

ABSOLUTE MAXIMUM RATINGS

Average Current/Segment:	**20mA Max.**
Peak Current/Segment:	**75mA Max.**
Reverse Voltage/Segment:	**3.0V Min.**
Operating and Storage Temperature:	**-20°C to +70°C**
Relative Humidity at 35°C:	**98%**
Lead Soldering Time @ 230°C:	**5 seconds**

FEATURES

- **Wide Format Range of RED LED Displays**
- **TSB3883 is YELLOW LED**
- **End Stackability of 2-Digit & 4-Digit Displays**
- **Prematched Light Intensity Within Each Digit**
- **PCB Mounting for Easy Installation**
- **Easy to Read Display with Wide Viewing Angle**
- **Excellent ON-OFF Contrast**

APPLICATIONS

- **Industrial Controls**
- **Data Terminals**
- **Test Equipment**
- **Point Of Sale**
- **Mini-computer Readout**
- **Home Consumer Product Application**

DESCRIPTION

A broad application spectrum is covered with the multiple formats and digit sizes offered by this series of LED displays. These 18 types are available as standard products. Three-Five Systems is able to provide other non-standard formats on request. Contact your local representative.

ELECTRICAL AND OPTICAL CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Segment Light Intensity	10mA/Seg.	0.10	0.30		mcd
Digit and DP Light Intensity	10mA/Seg.	0.80	1.60		mcd
Segment Forward Voltage	10mA/Seg.		1.70	2.00	V
Segment Reverse Voltage	100uA/Seg.	3.00	8.00		V
Peak Wavelength—Red			660		nm
—Yellow			585		nm
Spectral Width, Half-Intensity			40		nm
Viewing Angle, Off Axis			60		degrees
Intensity Matching	10mA/Seg. Avg.		±33		%

THREE-FIVE SYSTEMS, INC.
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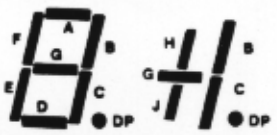
MULTIDIGIT LED NUMERIC DISPLAYS—TSB SERIES

Part Number	Digit Size	Format	Drive	Digit Intensity (Typ.)	Forward Voltage (Typ.)	Package Code
Red LED Numeric Displays						
TSB373 TSB374 TSB381 TSB382	0.3"	88 No DP 88 No DP 88 88	Common Cathode—Direct Common Anode—Direct Common Cathode—Multiplexed Common Anode—Multiplexed	1.6mcd	1.7V @ 10mA peak	A
TSB581 TSB582 TSB583 TSB584	0.5"	88 88 88 88	Common Cathode—Multiplexed Common Anode—Multiplexed Common Cathode—Direct Common Anode—Direct	1.6mcd	1.7V @ 10mA peak	B
TSB3881 TSB3882	0.3"	8888 8888	Common Cathode—Multiplexed Common Anode—Multiplexed	1.6mcd	1.7V @ 10mA peak	C
TSB5382 TSB5388 TSB5881 TSB5882	0.5"	1888 1888 8888 8888	Common Anode—Multiplexed Common Cathode—Multiplexed Common Cathode—Multiplexed Common Anode—Multiplexed	1.6mcd	1.7V @ 10mA peak	E E D D
TSB5931	0.5"	888888	Common Cathode—Multiplexed	1.6mcd	1.7V @ 10mA peak	G
TSB7881 TSB7882	0.7"	8888 8888	Common Cathode—Multiplexed Common Anode—Multiplexed	1.6mcd	1.7V @ 10mA peak	F
Yellow LED Numeric Display						
TSB3883	0.3"	8888	Common Cathode—Multiplexed	1.6mcd	1.7V @ 10mA peak	C



Segment Designation

PIN OUT SPECIFICATIONS

Pin No.	TSB 373	TSB 374	TSB 381	TSB 382	TSB 581	TSB 582	TSB 583	TSB 584	TSB 3881& 3883	TSB 3882	TSB 5382	TSB 5388	TSB 5881	TSB 5882	TSB 5931	TSB 7881	TSB 7882
1	Ga1*	Gc1	Ga	Ec	Ga	Gc	Ea1	Ec1	NC	NC	Ac	Ga1	Aa	Ac	c1	NC	NC
2	Ea1	Ec1	Ea	a1	c1	a1	NC	NC	Ea	Ec	NC	Gc1	NC	NC	c2	NC	NC
3	Da1	Dc1	NC	NC	Ea	Ec	Da1	Dc1	c1	a1	Dc	Ha1§	Da	Dc	c3	NC	NC
4	Ca1	Cc1	c1	Cc	NC	NC	DPa1	Cc1	NC	NC	a1	Jc1§	c1	a1	Aa	c1	a1
5	Ga2	Gc2	Da	a2	NC	NC	Ca1	DPc1	NC	NC	Jc1	DPa1	NC	NC	Fa	Fa	Fc
6	Ea2	Ec2	c2	Dc	NC	NC	Ga2	Gc2	c2	a2	Hc1	DPa2	NC	NC	Ba	c2	a2
7	Da2	Dc2	DPa	DPc	Da	Dc	Ea2	Ec2	Da	Dc	a2	DPa3	c2	a2	Ga	Ca	Cc
8	Ca2	Cc2	Ca	Gc	DPa	DPc	Da2	Dc2	Ga	Gc	Cc	DPa4	Ca	Cc	c4	DPa	DPc
9	c1&2†	a1&2	Ba	Bc	Ca	Cc	DPa2	Cc2	NC	NC	NC	Da	NC	NC	Da	Ga	Gc
10	Ba2	Bc2	NC	NC	c2	a2	Ca2	DPc2	c3	a3	a3	Ca	c3	a3	Ca	Ea	Ec
11	Aa2	Ac2	NC	NC	Ba	Bc	c1&2	a1&2	Ba	Bc	Bc	Ba	Ba	Bc	Ea	c3	a3
12	Fa2	Fc2	NC	NC	NC	NC	Ba2	Bc2	Aa	Ac	Fc	Aa	Fa	Fc	DPa	Ba	Bc
13	Ba1	Bc1	Aa	Ac	NC	NC	Aa2	Ac2	Fa	Fc	Ec	Ea	Ea	Ec	c5	Aa	Ac
14	Aa1	Ac1	NC	NC	NC	NC	Fa2	Fc2	c4	a4	a4	Fa	c4	a4	c6	c4	a4
15	Fa1	Fc1	Fa	Fc	NC	NC	Ba1	Bc1	DPa	DPc	DPc	Ga	DPa	DPc		Da	Dc
16	NC	NC	NC	NC	NC	NC	Aa1	Ac1	Ca	Cc	Gc	c1	Ga	Gc			
17					Aa	Ac	NC	NC				c2					
18					Fa	Fc	Fa1	Fc1				NC					
19					NC	NC	NC	NC				c3					
20					NC	NC	Ga1	Gc1				c4					

Segment, Polarity, Digit. a = Anode, c = Cathode.
*Anode G of Digit 1. †Common Cathode of Digits 1 and 2. §Segments H & J (vertical bar of + sign) internally connected in series.

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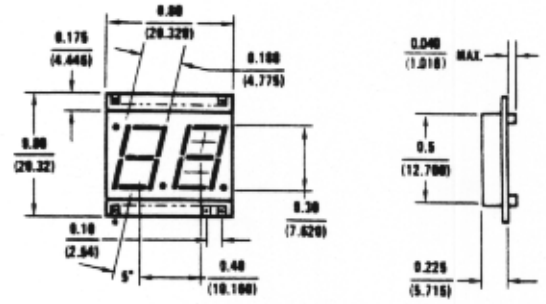
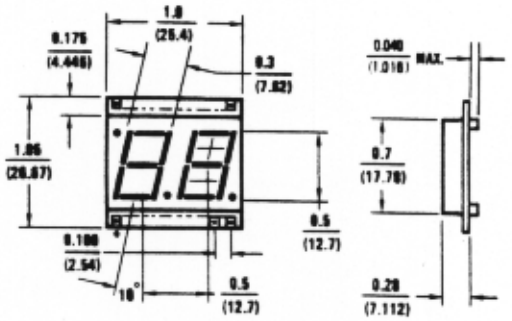
PACKAGE OUTLINES



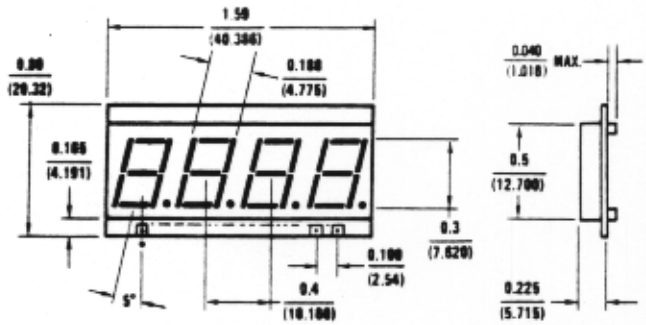
*Pin 1 as shown, pin out follows counterclockwise.

Outline A



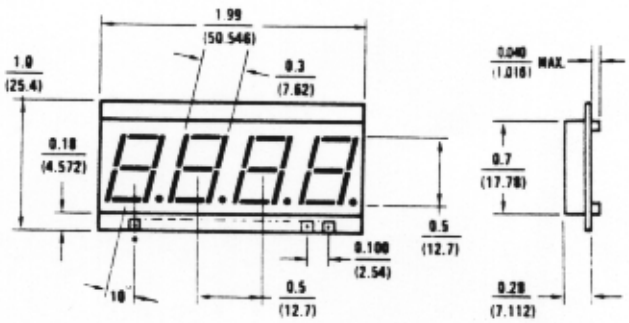
*Pin 1 as shown, pin out follows counterclockwise.

Outline B



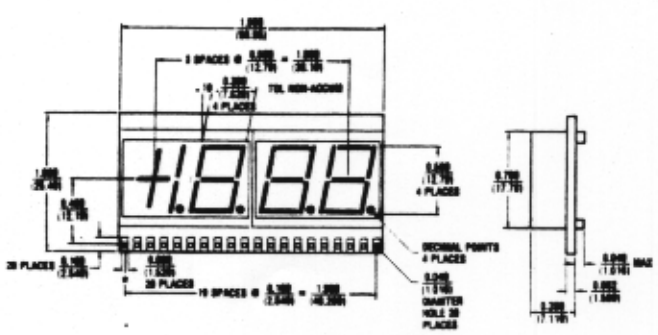
*Pin 1 as shown.

Outline C



*Pin 1 as shown.

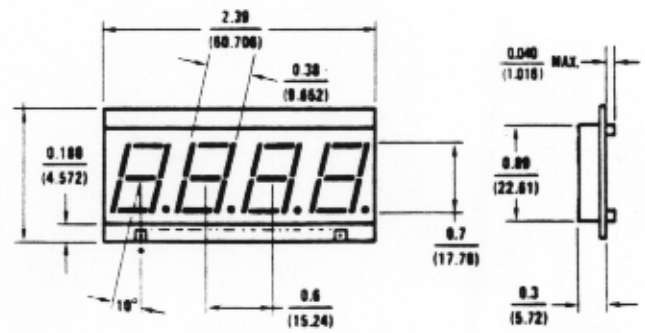
Outline D



Note 1: All tolerances ±0.015" (0.38mm).

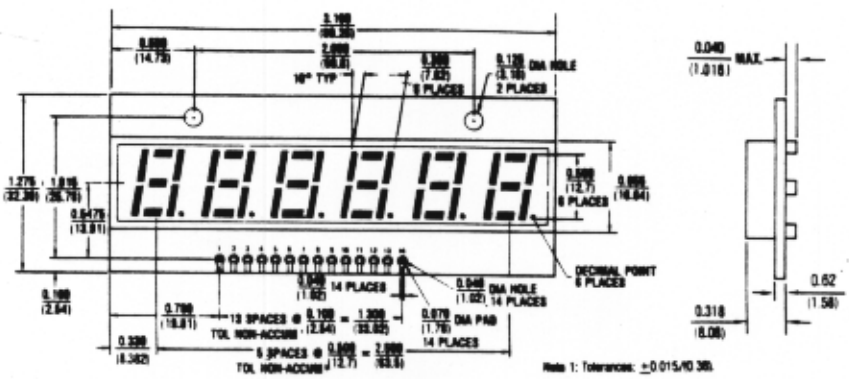
*Pin 1 as shown.

Outline E



*Pin 1 as shown.

Outline F



Outline G

RECOMMENDED ARRAY DISPLAYS PROCESSING

The TSB series array is constructed on a standard printed circuit board substrate and covered with a plastic lens.

The edge connector's tab will withstand a temperature of 230°C for 5 seconds.

The display lens area must not be elevated in temperature above 70°C. To do so will result in permanent damage to the display.

It is recommended that the back of the display be masked off with low tack masking tape during flux and clean operations, to prevent condensation of flux or cleaner on the underside of the lens.

It is also recommended that only localized cleaning with a cotton swab on external surfaces be performed after soldering.

Only rosin core solder, solid core solder and low temperature mildly activated flux are recommended. Recommended post solder cleaning solvents are Freon TF, Isopropanol, Methanol or Ethanol. These solvents are recommended only at room temperature and for short time periods.

The use of other solvents or elevated temperature use of the recommended solvents may cause permanent damage to the lens or the display.